QLogic 8Gb Fibre Channel Expansion Card (CIOv) for IBM BladeCenter

IBM BladeCenter at-a-glance guide

The QLogic 8Gb Fibre Channel Expansion Card (CIOv) for IBM BladeCenter enables high-speed access for IBM blade servers to connect to a Fibre Channel storage area network (SAN). When compared to the previous-generation 4 Gb adapters, the new adapter doubles the throughput speeds for Fibre Channel traffic. As a result, you can manage increased amounts of data and possibly benefit from a reduced hardware expense. For example, in bandwidth constrained Microsoft Exchange environments, by using 8 Gb adapters and switches, you can deploy 68% less adapter and switch hardware to support the same number of users as 4 Gb adapters.

Figure 1 shows the QLogic 8Gb Fibre Channel Expansion Card (CIOv).

Figure 1. QLogic 8Gb Fibre Channel Expansion Card (CIOv)

Did you know?

The performance bottleneck with Fibre Channel storage typically exists in the switching. By moving to 8 Gb adapters and switches, you can optimize the bottleneck to the storage controller, where it can be managed by expanding the disks attached to storage.

The adapter connects to the midplane directly, without having to use cables or small form-factor pluggable (SFP) modules. By eliminating these components for up to 14 servers, the resulting savings alone covers the investment in the BladeCenter chassis.

Part number information

Table 1 shows the part number to order this card.

Table 1. Part number and feature code for ordering

Description	Part number	Feature code*
QLogic 8Gb Fibre Channel Expansion Card (CIOv) for IBM BladeCenter	44X1945	1462 / 8242

* The first feature code listed is for configurations available through the System x sales channel. The second feature code listed is for configurations available through the Power Systems sales channel

The part number includes the following items:

- One QLogic 8Gb Fibre Channel Expansion Card (CIOv) for IBM BladeCenter
- A documentation CD containing *QLogic 8Gb Fibre Channel Expansion Card (CIOv) for IBM BladeCenter Installation and User's Guide*
- The *IBM Important Notices* document

Features

The QLogic 8Gb Fibre Channel Expansion Card (CIOv) has the following features:

- CIOv form factor
- QLogic 2532 8Gb ASIC
- PCI Express 2.0 host interface
- Support for two full-duplex Fibre Channel ports at 8 Gbps maximum per channel
- Support for Fibre Channel Protocol Small Computer System Interface (FCP-SCSI) and Fibre Channel Internet Protocol (FC-IP)
- Support for Fibre Channel service (class 3)
- Support for switched fabric, point-to-point, and Fibre Channel Arbitrated Loop (FC-AL) connections
- Support for NPIV when installed in the JS23/JS43
- Configuration and boot support in BIOS and UEFI

Operating environment

The expansion card is supported in the following environment:

- Temperature: 10°C to 35°C (50°F to 95°F)
- Relative humidity: 8% to 80% non-condensing

Supported servers and I/O modules

This card is installed in the PCI Express CIOv slot of a supported blade server. It provides connections to Fibre Channel-compatible modules in bays 3 and 4 of the supported BladeCenter chassis. A maximum of one CIOv is supported per single-wide (30 mm) blade server. Table 2 lists the IBM BladeCenter servers that support the QLogic 8Gb Fibre Channel Expansion Card (CIOv).

Table 2. Supported servers

Expansion card	Part number	HS12	HS21	HS21 XM	HS22	LS21	LS22	LS41	LS42	JS12	JS21	JS22	JS23/JS43	QS22	PN41
QLogic 8Gb Fibre Channel Expansion Card (CIOv)	44X1945	N	N	N	Y	N	N	N	N	N	N	N	Y	N	N

See IBM ServerProven at the following Web address for the latest information about the expansion cards that are supported by each blade server type:
http://ibm.com/servers/eserver/serverproven/compat/us/

CIOv expansion cards are installed in the CIOv slot in supported servers, such as the HS22, as highlighted in green in Figure 2.

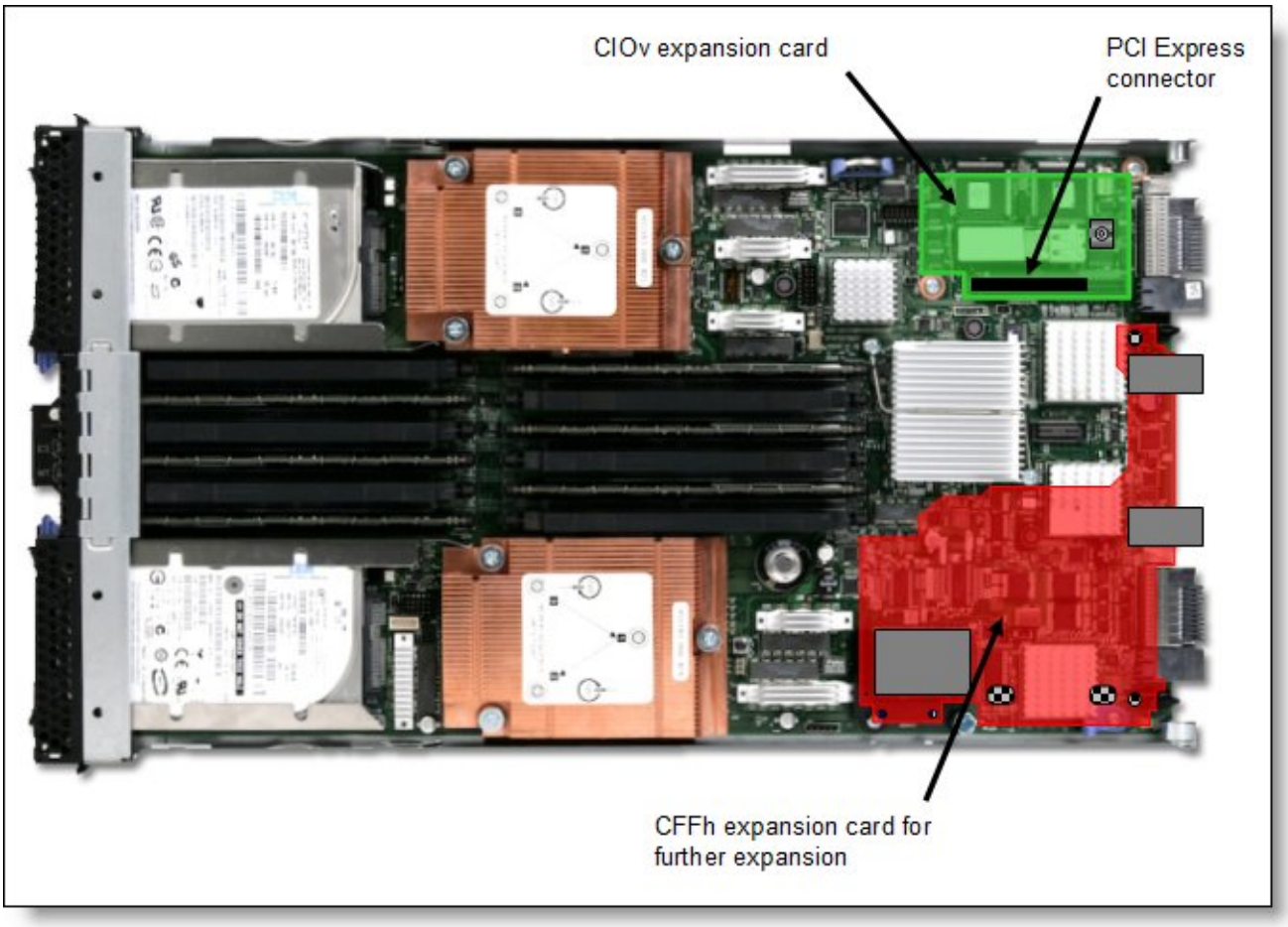

Figure 2. Location of the CIOv slot in the IBM BladeCenter HS22

The QLogic 8Gb Fibre Channel Expansion Card (CIOv) requires that a supported I/O module is installed in bay 3 and bay 4 of the chassis in which the cards and servers are installed.

Table 3 lists the supported I/O modules that can be used to connect to the expansion card. The 8 Gb switch modules are recommended. The card also supports 4 Gb Fibre Channel switch modules and the 4 Gb Intelligent Pass-thru Module. However, the card must operate at the 4 Gbps rate. The card also supports the Optical Pass Through Module but only at 2 Gbps.

Table 3. I/O modules recommended for use with the QLogic 8Gb Fibre Channel Expansion Card (CIOv)

	Part number	BladeCenter S	BladeCenter E	BladeCenter H	BladeCenter T	BladeCenter HT
Supported I/O modules (operate at 8 Gbps)						
QLogic 20-Port 8 Gb SAN Switch Module	44X1905	Y	Y	Y	Y*	Y†
QLogic 8 Gb Intelligent Pass-thru Module	44X1907	Y	Y	Y	Y*	Y†
Brocade Enterprise 20-port 8Gb SAN Switch Module for IBM BladeCenter	42C1828	N	Y	Y	N	Y†
Brocade 20-port 8Gb SAN Switch Module for IBM BladeCenter	44X1920	N	Y	Y	N	Y†
Brocade 10-port 8Gb SAN Switch Module for IBM BladeCenter	44X1921	N	Y	Y	N	Y†
Supported I/O modules (operate at 4 Gbps)						
Brocade 4 Gb 20-Port SAN Switch Module	32R1812	N	N	N	N	N
Brocade 4 Gb 10-Port SAN Switch Module	32R1813	N	N	N	N	N
Cisco 4 Gb 20-Port Fibre Channel Switch Module	39Y9280	N	Y	Y	Y*	Y
Cisco 4 Gb 10-Port Fibre Channel Switch Module	39Y9284	Y	Y	Y	Y*	Y
QLogic 4 Gb 20-Port Fibre Channel Switch Module	26R0881	N	Y	Y	Y*	Y
QLogic 4 Gb 10-Port Fibre Channel Switch Module	32R1904	N	Y	Y	Y*	Y
QLogic 20-Port 4 Gb SAN Switch Module	43W6725	N	Y	Y	Y*	Y
QLogic 10-Port 4 Gb SAN Switch Module	43W6724	Y	Y	Y	Y*	Y
QLogic 4 Gb Intelligent Pass-thru Module	43W6723	Y	Y	Y	Y*	Y
McDATA 4 Gb 20-Port Fibre Channel Switch Module	32R1833	N	Y	Y	Y*	Y
McDATA 4 Gb 10-Port Fibre Channel Switch Module	32R1905	N	Y	Y	Y*	Y
QLogic 4 Gb Intelligent Pass-thru Module	43W6723	Y	Y	Y	Y*	Y
Supported I/O modules (operate at 2 Gbps)						
IBM BladeCenter Optical Pass-thru Module	39Y9316	Y	Y	Y	Y	Y

Consider the following restrictions regarding the use of the switch modules in Table 3:

- (*) When any of the switch modules that have an asterisk (*) is installed in BladeCenter T, the internal switch connections to blade ports operate at 2 Gbps. The external ports operate at up to 8 Gbps (or 4 Gbps for 4 Gb switch modules).
- (†) When any of these switch modules that have the dagger indicator symbol (†) is installed in BladeCenter HT, the internal switch connections to blade ports are supported at 4 Gbps. The external ports operate at up to 8 Gbps (or 4 Gbps for 4 Gb switch modules).
- The QLogic 8Gb Fibre Channel Expansion Card (CIOv) can be installed in servers in the BladeCenter S and used with supported switch modules as shown in the table. However, by doing so, you lose the ability to connect to the BladeCenter S Disk Storage Modules (DSMs). The Fibre Channel expansion card goes in the place of the SAS expansion card that is needed to connect to the DSMs.

Popular configurations

The QLogic 8Gb Fibre Channel Expansion Card (CIOv) can be used in various configurations. Figure 3 shows the CIOv card installed in a supported blade server, which in turn is installed in a BladeCenter chassis. The chassis is connected to the IBM System Storage DS3400. The RAID functionality is provided by the external storage system.

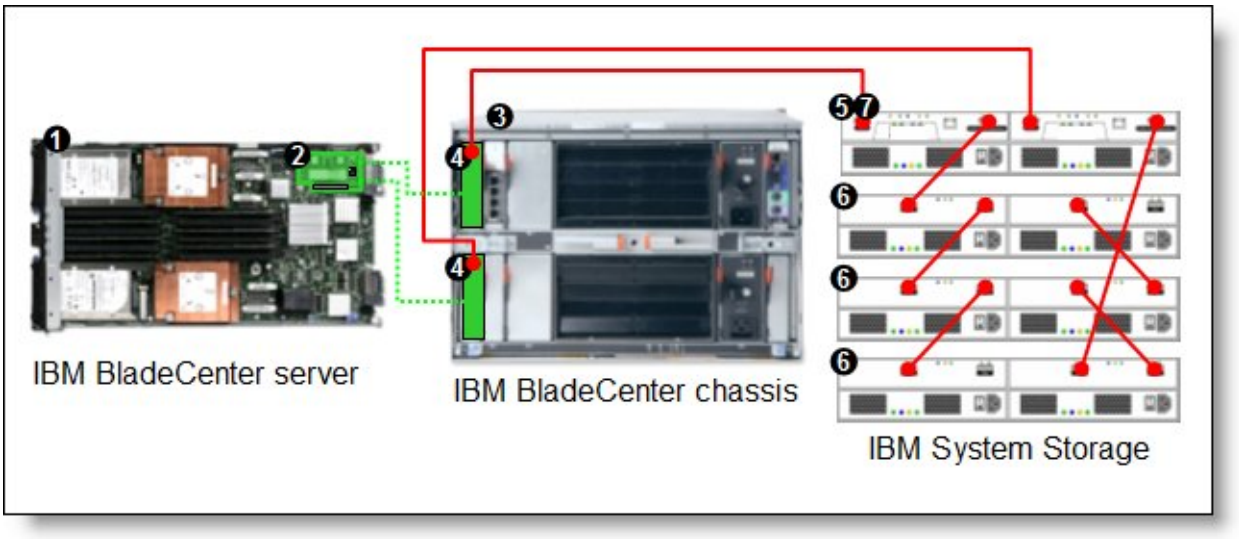

Figure 3. IBM BladeCenter connected to an external IBM System Storage DS3400 storage solution

Table 4 lists the parts that are used in the configuration shown in Figure 3.

Table 4. Components used when connecting the QLogic 8Gb Fibre Channel Expansion Card (CIOv) to external disk storage (as shown in Figure 3)

Diagram reference	Part number / Machine type	Description	Quantity
1	7870	IBM BladeCenter HS22 or other supported server	1 to 14
2	44X1945	QLogic 8Gb Fibre Channel Expansion Card (CIOv)	1 per server
3	Varies	IBM BladeCenter chassis* (see Table 3)	1
4	44X1905	QLogic 20-Port 8 Gb SAN Switch Module	1 or 2
5	1726-41X or 1726-42X	IBM System Storage DS3400 (Single or Dual Controller)	1
6	1727	Optional: IBM System Storage EXP3000 (Single or Dual ESM)	1 to 3
7	39R6536	DS3000 Partition Expansion License	1

*Note: The expansion card can be installed in servers in the BladeCenter S (8886). However, by doing so, you lose the ability to connect to the BladeCenter S DSMs. The Fibre Channel expansion card goes in the place of the SAS expansion card that is needed to connect to the DSMs.

This configuration also requires cabling between the chassis and the storage server and between the storage server and expansion units. The cable part numbers are not listed in Table 4. Note that the DS3400 storage solution operates at 4 Gbps.

Supported operating systems

The QLogic 8Gb Fibre Channel Expansion Card (CIOv) supports the following operating systems:

- IBM AIX 5L for POWER Version 5.3
- IBM AIX Version 6.1
- IBM i operating system 6.1
- IBM Virtual I/O Server
- Microsoft Windows Essential Business Server 2008 Premium Edition
- Microsoft Windows Essential Business Server 2008 Standard Edition
- Microsoft Windows Server 2003, Web Edition
- Microsoft Windows Server 2003/2003 R2, Enterprise Edition
- Microsoft Windows Server 2003/2003 R2, Enterprise x64 Edition
- Microsoft Windows Server 2003/2003 R2, Standard Edition
- Microsoft Windows Server 2003/2003 R2, Standard x64 Edition
- Microsoft Windows Server 2008 R2
- Microsoft Windows Server 2008, Datacenter x64 Edition
- Microsoft Windows Server 2008, Datacenter x86 Edition
- Microsoft Windows Server 2008, Enterprise x64 Edition
- Microsoft Windows Server 2008, Enterprise x86 Edition
- Microsoft Windows Server 2008, Standard x64 Edition
- Microsoft Windows Server 2008, Standard x86 Edition
- Microsoft Windows Server 2008, Web x64 Edition
- Microsoft Windows Server 2008, Web x86 Edition
- Microsoft Windows Small Business Server 2003/2003 R2 Premium Edition
- Microsoft Windows Small Business Server 2003/2003 R2 Standard Edition
- Microsoft Windows Small Business Server 2008 Premium Edition

- Microsoft Windows Small Business Server 2008 Standard Edition
- Red Hat Enterprise Linux 4 AS for AMD64/EM64T
- Red Hat Enterprise Linux 4 AS for iSeries and pSeries
- Red Hat Enterprise Linux 4 AS for x86
- Red Hat Enterprise Linux 4 ES for AMD64/EM64T
- Red Hat Enterprise Linux 4 ES for x86
- Red Hat Enterprise Linux 4 WS/HPC for AMD64/EM64T
- Red Hat Enterprise Linux 4 WS/HPC for x86
- Red Hat Enterprise Linux 5 for System i and System p
- Red Hat Enterprise Linux 5 Server Edition
- Red Hat Enterprise Linux 5 Server Edition with Xen
- Red Hat Enterprise Linux 5 Server with Xen x64 Edition
- Red Hat Enterprise Linux 5 Server x64 Edition
- SUSE LINUX Enterprise Server 10 for AMD64/EM64T
- SUSE LINUX Enterprise Server 10 for IBM POWER
- SUSE LINUX Enterprise Server 10 for x86
- SUSE LINUX Enterprise Server 10 with Xen for AMD64/EM64T
- SUSE LINUX Enterprise Server 10 with Xen for x86
- SUSE LINUX Enterprise Server 11 for IBM POWER
- VMware ESX 3.5
- VMware ESXi 3.5

See IBM ServerProven at the following address for the latest information about the specific versions and service packs that are supported:
http://ibm.com/servers/eserver/serverproven/compat/us/

Select the blade server and then select the expansion card to see the supported operating systems.

Related publications

For more information, see the following resources:

- *QLogic 8Gb Fibre Channel Expansion Card (CIOv) Installation and User Guide*
  http://www.ibm.com/support/docview.wss?uid=psg1MIGR-5082206
- IBM U.S. Announcement Letter
  http://ibm.com/common/ssi/cgi-bin/ssialias?infotype=dd&subtype=ca&&htmlfid=897/ENUS109-283
- IBM U.S. Announcement Letter for NPIV support on JS23/JS43
  http://ibm.com/common/ssi/cgi-bin/ssialias?infotype=dd&subtype=ca&&htmlfid=897/ENUS109-545
- *IBM BladeCenter Interoperability Guide*
  http://www.ibm.com/support/docview.wss?uid=psg1MIGR-5073016
- IBM Redbooks publication *IBM BladeCenter Products and Technology*, SG24-7523
  http://www.redbooks.ibm.com/abstracts/sg247523.html

Notices

This information was developed for products and services offered in the U.S.A.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service. IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing, IBM Corporation, North Castle Drive, Armonk, NY 10504-1785 U.S.A.

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law: INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you. This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this IBM product and use of those Web sites is at your own risk.IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you. Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products. This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurement may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

COPYRIGHT LICENSE:

This information contains sample application programs in source language, which illustrate programming techniques on various operating platforms. You may copy, modify, and distribute these sample programs in any form without payment to IBM, for the purposes of developing, using, marketing or distributing application programs conforming to the application programming interface for the operating platform for which the sample programs are written. These examples have not been thoroughly tested under all conditions. IBM, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs.

© Copyright International Business Machines Corporation 2009. All rights reserved.
Note to U.S. Government Users Restricted Rights -- Use, duplication or disclosure restricted by
GSA ADP Schedule Contract with IBM Corp.

This document was created or updated on December 16, 2009.

Send us your comments in one of the following ways:

- Use the online **Contact us** review form found at:
  ibm.com/redbooks
- Send your comments in an e-mail to:
  redbook@us.ibm.com
- Mail your comments to:
  IBM Corporation, International Technical Support Organization
  Dept. HYTD Mail Station P099
  2455 South Road
  Poughkeepsie, NY 12601-5400 U.S.A.

This document is available online at http://www.ibm.com/redbooks/abstracts/tips0692.html .

Trademarks

IBM, the IBM logo, and ibm.com are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries, or both. These and other IBM trademarked terms are US registered or common law trademarks owned by IBM at the time this information was published. Such trademarks may also be registered or common law trademarks in other countries. A current list of IBM trademarks is available on the Web at http://www.ibm.com/legal/copytrade.shtml

The following terms are trademarks of the International Business Machines Corporation in the United States, other countries, or both:

AIX 5L™
AIX®
BladeCenter®
IBM®
iSeries®
POWER®
pSeries®
Redbooks®
Redpaper™
Redbooks (logo)®
ServerProven®
System i®
System p®
System Storage™
System x®

The following terms are trademarks of other companies:

Microsoft, Windows, and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both.

Linux is a trademark of Linus Torvalds in the United States, other countries, or both.

Other company, product, or service names may be trademarks or service marks of others.